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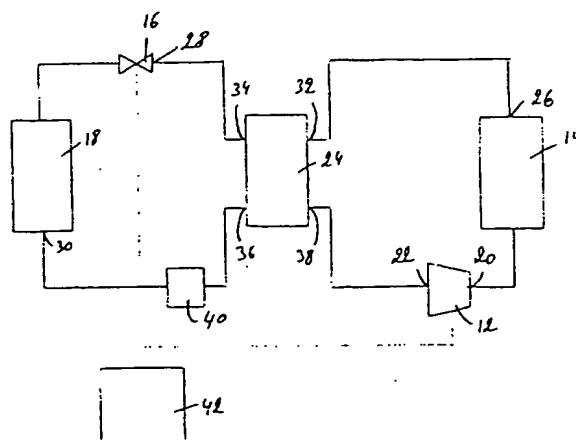
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(54) Title: AIR CONDITIONING SYSTEM



(57) **Abstract:** Air conditioning system (10), in particular an air conditioning system having carbon dioxide as refrigerant, particularly for use in a motor vehicle. The air conditioning system (10) comprises a compressor (12), a gas cooler (14), an expansion valve (16) and an evaporator (18) arranged in series and forming a closed circuit for the refrigerant. The compressor (12) has a compressor capacity control element and the air conditioning system (10) further comprises a controller (42) for controlling the compressor capacity control element and the expansion valve (16) so as to regulate an expansion valve inlet pressure. The controller (42) regulates the expansion valve inlet pressure by controlling the compressor capacity control element so as to align evaporator air off temperature with a set point; by monitoring expansion valve inlet temperature; by determining a required expansion valve inlet pressure corresponding to the monitored expansion valve inlet temperature by means of a control algorithm; and by adjusting the expansion valve (16) and the compressor capacity control element together along an iso-capacity curve to the required expansion valve inlet pressure.

WO 2004/005807 A1